OKEFENOKEE NATIONAL WILDLIFE REFUGE

BIOLOGICAL REPORT

JANUARY - JUNE
1957.

I. ECOLOGICAL SUCCESSION STUDIES FOLLOWING CONSTRUCTION OF THE SILL.

A. Blackgum-Bay Association.

A location was selected north of the Pocket where this type will be affected by the backwater of the sill and fifty chains staked out with stakes driven at one chain intervals. Reading of the vegetative cover along this transect is scheduled for late this summer.

A similar transect has been established in this type in Lot 188. This transect is in the northwest part of the swamp and will not be affected by the sill.

B. Severe Burn North of Billy's Lake.

This area will be affected by the sill. Last fall, a 12-chain transect was staked out in this area. It is planned to map in detail a one-chain wide strip along this line. The information gotten from this plot can also be used in the burn study.

II. ECOLOGICAL SUCCESSION FOLLOWING THE 1954-1955 FIRES.

A. Soldiers Camp Island.

This is an example of a stand of cypress that was almost completely killed by the fire which burned away from two to three feet of peat down to the mineral soil. A plot ten chains long and one chain wide was mapped in detail last August. Copies of these maps will be prepared during the coming winter.

Unless radical changes have taken place in the cover since last year, this area will not be mapped this year. It will be inspected in August to see if such changes have occurred.

B. Suwannee Canal.

This is an example of a severely burned area where the peat was not burned entirely away. A plot similar to the one described II A was mapped in detail last summer. This area will not be remapped this year unless changes have occurred.

C. Minnie's Lake.

This is an example of a Cypress-Bay association which was not reached by the 1954-1955 fires. A plot two chains wide and five chains long was laid out last fall and will be mapped in detail this summer or this fall.

D. Prairie.

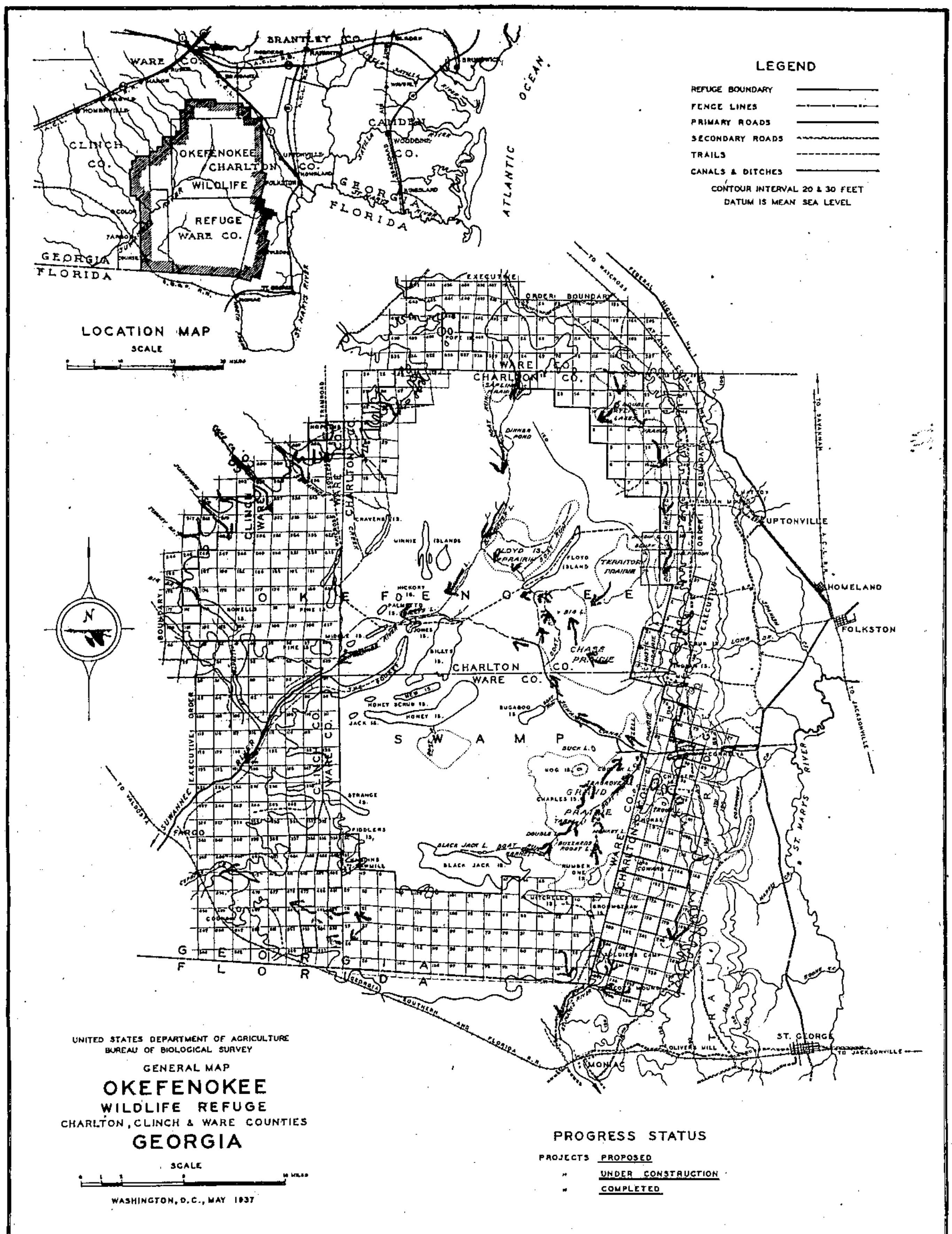
A transect was staked out across Chesser Prairie for 46 chains. Stakes have been driven at 50 link intervals. Readings of the vegetative coverage on four one-milacre plots at each station will be made as described in the January report.

From random observations and from notes made in different prairies, it is seen that there are several prairie types. It is planned to described these associations and determine their relations to elevations, water levels, and peat depth and consistency.

III. WATER MOVEMENT STUDIES.

The rise in water levels during the past five months has made more parts of the swamp accessible and it has been possible to add something to the water current information given in the last report. The attached map shows the water currents as known at the present time. It has been found that there are some areas in the swamp where boat runs cross from one watershed to another. In the boat run to Double Lakes, the current is, in general, toward Durden Prairie from about 1/4 mile east of Double Lakes. Beyond that point the flow is in the opposite direction, through Double Lakes and southwestward toward Floyd's Prairie.

In April, it was found that the water flowed from the north fork of the Canal into the Floyd's Island boat run and northward across Chase Prairie to Floyd's Island. In June, it was found that the flow at the mouth of the boat run was from Chase Prairie into the Canal. However, a few hundred yards down the boat run, the flow was still northward toward Floyd's Island. Presumably, changes in water elevations will result in changes in the direction of the currents in some places.


LEGEND
REFUGE BOUNDARY
FENCE LINES
PRIMARY ROADS
SECONDARY ROADS
TRAILS
CANALS & DITCHES
CONTOUR INTERVAL 20 & 30 FEET
DATUM IS MEAN SEA LEVEL
LOCATION MAP
SCALE
BRANTLEY CO.
WARE CO.
CLINCH CO.
OKEFENOKEE
CHARLTON CO.
WILDLIFE
REFUGE
WARE CO.
CAMDEN CO.
GEORGIA
FLORIDA
ATLANTIC
OCEAN
UPTONVILLE
HOMELAND
FOLKSTON
ST. GEORGE
MONIAC
FARGO
O K E F E N O K E E
S W A M P
CHARLTON CO.
WARE CO.
CLINCH CO.
G E O R G I A
F L O R I D A
UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY
GENERAL MAP
OKEFENOKEE
WILDLIFE REFUGE
CHARLTON, CLINCH & WARE COUNTIES
GEORGIA
SCALE
WASHINGTON, D.C., MAY 1937
PROGRESS STATUS
PROJECTS PROPOSED
" UNDER CONSTRUCTION
" COMPLETED

20 OKE 29

IV. WILDLIFE POPULATION STUDIES.

Two routes have been established and trips at approximately two weeks intervals to record wildlife populations have been made, as far as conditions would permit.

One route includes the Suwannee Canal as far as the Chesser Prairie boat run, thence out the boat run as far as Buzzard Roost Lake. Usually this boat run was not traversible and it was not possible to go far in Chesser and Grand Prairies. In some cases the trip out the canal was extended as far as Corn Box. In any case distances were recorded so that it would be possible to record wildlife observations in terms of mileage.

The other route extends from Jones Island to Billy's Lake and from Billy's Lake to Minnie's Lake and from there to the upper end of Big Water.

Wildlife counts are made and recorded bi-weekly according to whether the habitat is prairie, canal or wooded water course and the mileage traveled in each habitat is also recorded. This data is being tabulated and filed for future use.

Cranes.

The winter population of Cranes was certainly greater than in many years. Refuge Aid Hall, Maintenance Man Cone and Laborers Chesser and Rider, all life-long residents of the swamp area, agree that there were more cranes in the swamp than at any time in their memories. From 100 to 200 cranes could be seen on Chesser Prairie almost any time during the late winter. On January 27, Mr. Rider and I, on a five mile walk in Chesser Prairie, counted 522 Cranes. Some of our observations may have been duplications but we tried to avoid this. Flock numbers were observed as follows: 4,15,5,17,2, 3,3,6,6,3,4,4,9,35,3,3,3,3,7,4,4,4,4,12,6,3,4,23,4,6,100 (estimate), 4,3, 192 (170 estimated),3,4,3.

The greatest concentration was in Chesser Prairie, but cranes could be seen in all the other prairies and usually were seen when these prairies were visited. I believe that 1000 cranes is a conservative estimate of the winter population of the swamp.

The observations of the past winter are in sharp contrast to estimates of previous years. The refuge estimates for the three previous winters is 200. Lawrence H. Walkinshaw (The Sandhill Cranes. Bul. 29 Cranbrook Institute) placed the crane population of the swamp in 1921 at 100 birds. Thomas and James Roddenberry reported 94 cranes seen in three days in January in Chase Prairie in 1935. (Hebard Winter Birds of the Okefinokee and Coleraine, Ga. Nat. Sci. Bul. No. 3). H. A. Carter observed 70 cranes in three days in February 1935. Dr. Walkinshaw and Ben Chesser reported observations of flocks seen as: 2,1,1,2,2, 8,4,1,1,3, 1, during a day spent in Chase and Chesser Prairies.

Probably habitat conditions were more favorable to cranes last winter than in previous years. General water levels in the swamp have been much below normal for the past four years, and paintroot (Lachnanthes tinctoria), a favorite food of the crane, has increased considerably. The prairies, during most of the winter, were usually wet but not flooded.

After the middle of March, such large numbers of cranes have not been observed. Only a few have been observed on trips in Chesser Prairie or other prairies. Several factors may have contributed to this apparent decline in population since spring: (1) Part of the birds may have migrated to nesting grounds elsewhere. Mr. Ambrosen reported between 525 and 550 cranes migrating northward over Piedmont Refuge, March 11, 14 and 15. This was at about the time we stopped seeing such large numbers. Perhaps many of our wintering cranes were of the northern subspecies, Grus canadensis tabida. (2) There was a rise in water levels about the middle of March and many cranes may have left because the swamp was less suitable for them. (3) During nesting season, cranes are more scattered and are less likely to be seen.

Snipes.

The snipe population in the prairies was very high in January and early February. On January 29, 545 snipes were counted in Chesser Prairie. Apparently conditions in the prairies were right for snipes. There were many areas of a "soupy wet" consistency.

Waterfowl.

Estimates of waterfowl populations during the winter were submitted in the narrative reports. Apparently, conditions were not right for ducks. Only an occasional small flock of wood ducks, mallards or black ducks were to be seen on any day in the swamp. Four broods of young wood ducks have been seen this summer in Chase and Grand Prairies.

Big Game.

There has been no systematic big game inventory. Observations of the animals and their signs are being recorded.

Deer and deer signs have been seen in the Camp Cornelia area, Chesser Island and vicinity, the Pocket, the vicinity of Williamsburg, Floyd's Island, Buck Lake Prairie.

Bear signs have been seen on Chesser Island, between Chesser Island and Camp Cornelia, the Pocket, Suwannee Creek, and in abundance on Floyd's Island. It has been reported that fourteen bears have been killed west of the refuge since mid-winter.

Alligators.

Apparently the Alligator suffered little ill effects from the drouth and fire. Before the rise in water levels in May, the counts along Suwannee Canal and Minnie Lake Run were high. On May 2, fifty were counted between Camp Cornelia and Corn Box. April 18, thirty were counted between Minnie's Lake and Big Water. Since the rise in the water level, alligators have moved out to the shallow water areas and are less frequently seen.

V. WEED CONTROL.

The water hyacinth infestations reported in January have been investigated. Apparently the infestation at Manor was eliminated by the spraying last fall. The hyacinths at Ribbon's Pond may have been eliminated but since this infestation has a way of reappearing, we will continue to inspect this pond. The infestations at Argyle and Homerville still persist.

A two-acre infestation was found at Homerville during this period and was treated with a 2,4-D and 2,4,5-T mixture. About a 99% kill was gotten. This infestation and the other persisting infestations will be retreated soon.

Water hyacinth has reappeared in a pond east of Homerville where it has been absent for several years. This infestation has been treated but it is too early to assess results.

Unless large infestations of water hyacinth are found, treatments from now on will be spot treatments and not measurable.

VI. COVER TYPE STUDIES.

Up to now, this work has been incidental to other work. An effort has been made to distinguish the swamp plant associations. Records of the plants found in the probable types are being kept. It is believed that these will ultimately take shape as type descriptions. At present, it appears that the prairie types include a chain fern-paint root-sphagnum type, a xyris type, a water-lily-neverwet type - and, perhaps, a spadderdock-pickerel weed type. The wooded swamp is probably more complex, especially around the swamp edge.

VII. COMPILATION OF SPECIES LISTS.

The refuge bird list was completed this period and has been published.

Information on the plants of the swamp is being compiled. It is my hope to prepare a guide to the trees and shrubs of the swamp for popular use.

VIII. PUBLIC RELATIONS.

Special visitors accompanied and aided during the period included Mr. Victor Bianchi, Chilean participant in the State Department's Foreign Leaders Exchange Program. Mr. Bob Smallman, writer and photographer for "Friends", Pat Watters and Bill Wilson, feature writer and photographer for the Atlanta Journal, Herman Coolidge, President of Georgia Ornithological Society, Frederick V. Hebard, student of Okefenokee birds, and Don Trenary, feature writer of Milwaukee Journal.

Short nature articles on subjects of interest about the refuge were submitted occasionally to the Waycross Journal Herald, The Charlton County Herald and the Clinch County News. These included articles on the Christmas bird count, the Sandhill crane, the Snow Goose, the Alligator Snapping Turtle, the Raccoon, the Native Orchids of Okefenokee, and the Refuge bird list.

IX. EVALUATION OF DIRECT SEEDING OF LONGLEAF PINE.

An evaluation of the longleaf pine seeding experiment was made. About 100 acres were planted.

There were two sites planted. The dry ridge in the vicinity

of Camp Cornelia and the Harley Place, and the moist site, most of which was on Chesser Island.

The fire-killed trees were bulldozed off and the land disced in November and again in mid-February on 17.5 acres on Chesser Island. 11.2 acres on this site were bulldozed off and disced in November. Approximately 35 acres were bulldozed with no other site preparation.

33.2 acres on the dry site were disced in November and December.

The seeds for this planting were collected in the fall of 1955 and placed under refrigeration at 20° Fahrenheit until December, 1956, when they were treated with predator repellent by Jack Spencer of the Research Branch and stored in an unheated room until they were planted, February 28 and March 1. They were sowed at the rate of three pounds per acre. Germination was tested by the Forest Service laboratory in Macon and the seed were reported to be 53% viable.

Planting conditions were apparently good. During February there was 1.85 inches rain and there was a slow drizzle March 3 and 4. There has been more than a normal amount of rain through the summer.

One-milacre plots were established at three chain intervals throughout the seeded area.

In order to determine the germination, predator pressure and survival, 21 domes made of 1/4" mesh hardware cloth were placed on typical sites on the seeded areas. 20 seeds were placed under each dome and 20 adjacent to but outside each dome.

Germination checks of the seed were made on April 2, 12, 29 and June 20. The results are shown in tables I and II. It will be seen that germination on the dry Trail Ridge site was practically nil. Germination on the moist Chesser Island site was 53%, the same as that of the laboratory tests. The seeds outside the domes showed 43%. This lower germination or lower survival outside the dome may indicate the effects of predation, disturbance, or more direct sunlight..

Survival by June 24 was only 28% under the domes. In other words, nearly half of the germinated seeds died. Survival of the seeds outside the domes was only 11%, or one fourth of seeds which had germinated. It could be that this difference in survival of seedlings outside the domes is because of predation but it is suggested that the small amount of shading afforded by the hardware cloth enhanced survival.

Evaluation of the stand was made by counts made in the one mil-acre plots are shown in table III. According to the 1956 Southeastern Direct Seeding Conference Proceedings, an average of one seedling per mil-acre plot is considered adequate stocking. According to this, our stocking is 52.6 per cent. of adequate on the bulldozed and double disced area on the moist site; 50% of adequate on the same site which was disced only once; 22.2 per cent. of adequate on the same site where the fire killed trees were bulldozed with no other treatment; and only 6.6 per cent. of adequate on the dry Trail Ridge site.

It is pointed out that the germination tests showed that the seeds used were of poor quality. Probably something approaching an adequate stocking would have been gotten on the moist site where the soil was plowed if good seeds had been used.

Very poor results were gotten on the dry site seeding on Trail Ridge. While we had what might be considered enough rain, the alternate wetting and drying of the surface soil was probably not favorable to germination of the seeds and the initial growth of the seedlings. Probably there was enough continuous moisture in the surface soil on Chesser Island to favor germination and initial growth.

It is believed that fall seeding on the dry site would result in better stocking than spring seeding, provided it is a wet fall. The surface soil then would more likely be continuously moist through the fall and winter than it would in the spring and summer, thus affording a more favorable condition for germination and initial survival.

This report represents a termination of the direct seeding study.

Respectfully submitted,

Date:

August 6, 1957

Eugene Cypert

TABLE I.

FIELD GERMINATION AND SURVIVAL OF LONGLEAF PINE SEED. EACH STATION WITH 20 PROTECTED AND 20 UNPROTECTED SEED - CHESSER ISLAND.

Station Number	Germinated				Survival				Remarks
	Protected		Unprotected		Protected		Unprotected		
	No.	%	No.	%	No.	%	No.	%	
1-1	3	15	-	-	14	70	-	-	15 75 - - 13 85 - - Unprotected seed probably washed a
1-2	2	10	2	10	11	55	11	55	11 55 12 60 9 45 2 10
1-3	0	0	1	5	11	55	10	50	11 55 10 60 4 20 2 10
1-4	2	10	4	20	9	45	10	50	9 45 11 55 4 20 0 0
1-5	-	-	-	-	8	40	1	5	8 40 1 5 0 0 0 0 Flooded April 2. Most unprotected seed washed away.
1-6	3	15	0	0	12	60	6	30	12 60 7 35 9 45 4 20
1-7	4	20	2	10	9	45	10	50	9 45 10 50 6 30 6 30
2-1	-	-	-	-	-	-	-	-	- - - - - - - - Flooded.
2-2	4	20	5	25	10	50	11	55	10 50 11 55 4 20 2 10
3-1	5	25	4	20	12	60	11	55	13 65 11 55 7 35 2 10
3-2	-	-	-	-	-	-	-	-	- - - - - - - - Flooded.
3-4	2	10	0	0	9	45	5	25	9 45 5 25 1 5 1 5
Average	2.8	14	2.3	13	10.5	52	8.3	42	10.7 53 8.7 43 5.1 28 2.1 11

TABLE II.

FIELD GERMINATION AND SURVIVAL OF LONGLEAF PINE. EACH STATION WITH 20 PROTECTED AND 20 UNPROTECTED SEED - TRAIL RIDGE.

Station	April 2				April 12				April 29				June 20			
Number	Protected		Unprotected		Protected		Unprotected		Protected		Unprotected		Protected		Unprotected	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
15-1	0	0	0	0	1	5	0	0	1	5	0	0	0	0	0	0
15-2	0	0	0	0	2	10	0	0	2	10	0	0	0	0	0	0
15-3	0	0	1	5	0	0	1	5	0	0	1	5	0	0	0	0
15-4	1	5	0	0	1	5	0	0	1	5	0	0	0	0	0	0
15-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-1	0	0	0	0	1	5	0	0	1	5	0	0	1	5	0	0
19-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary	.1	.6	.1	.6	.4	2.2	.1	.6	.4	2.2	.1	.6	.1	.6	0	0

TABLE III.

SURVIVAL OF LONGLEAF PINE SEEDLINGS ON DRY AND MOIST SITES AS DETERMINED FROM A SERIES OF ONE-MILACRE PLOTS ESTABLISHED AT THREE CHAIN INTERVALS.

Site	Acres	No. Plots	Treatment	Survival	Percent Stand
Moist	17.5	19	Bulldozed and disced twice	10	52.6
Moist	11.2	14	Bulldozed and disced once	7	50.0
Moist	35.0	36	Bulldozed only	8	22.2
Dry	33.2	30	Disced	2	6.6